Steven Smith
Software Project Lead
Center for Applied Scientific Computing
Lawrence Livermore National Laboratory
L-561
Livermore, CA 94550
(925) 422-1922

Professional Preparation

University Of Illinois, Urbana-Champaign Computer Science B.S., 1991

Appointments

Lawrence Livermore National Laboratory, Livermore California, 1991-current

Software project lead for several applications: SAMRAI a parallel structured adaptive mesh refinement framework, MESA a national scale decision support system for modeling spread of disease in livestock populations, and ParFlow a massively parallel groundwater flow application. Lead developer for effort to improve scalability of the NS3 network simulator. Algorithm and software development for massively parallel numeric libraries. Led and assisted porting efforts of several commercial applications to an HPC environment including General Electric PSLF and Energy Exemplar PLEXOS. Lead developer on effort to integrate a subsurface flow model (Parflow) into the Weather Research and Forecasting (WRF) mesoscale numerical weather prediction system. Successfully scaled SAMRAI and Parflow applications to 100,000+ cores. Principle investigator for accelerator processors (GPU) project for SAMRAI framework.

IBM Federal Systems Division, Manassas Virginia, 1987 – 1991

Development of sonar combat team trainer.

Selected Publications

Maxwell, R.M., Lundquist, J.K., Mirocha, J.D., Smith, S.G., Woodward, C.S. and Tompson, A.F.B. "Development of a coupled groundwater-atmospheric model". Monthly Weather Review Vol 139, No 1, Jan 2011. pp 96-116

Kollet, S.J., Maxwell, R.M., Woodward, C.S., Smith, S.G., Vanderborght, J., Vereecken, H., and Simmer, C. "Proof-of-concept of regional scale hydrologic simulations at hydrologic resolution utilizing massively parallel computer resources". Water Resources Research, 46, W04201, 2010.

Cleary A.J., Smith, S.G.,Vassilevska T.K., Jefferson, D.R., Scalable Entity-Based Modeling of Population - Based Systems, UCRL-TR-209617, 2005, also found as DOE report at www.osti.gov/servlets/purl/917499-yDsNh0/

Epperly, Tom, Scott Kohn, and Steve Smith, "Achieving Language Interoperability With Babel," Workshop Object-Oriented & Component Techn. for Sci. Comput., invited talk, Livermore, CA, July 23-25, 2001. Also available as Lawrence Livermore National Laboratory technical presentation UCRL-PRES-144649, July 2001.

Wissink, Andrew, Richard Hornung, Scott Kohn, and Steve Smith, "Adaptive Mesh Refinement Applications Using the SAMRAI Library," submitted to ACM Int. Sym. Comput. Object-Oriented

Parallel Environments (ISCOPE), Stanford University, Palo Alto, CA, June 2-4, 2001. Also available as Lawrence Livermore National Laboratory technical abstract UCRL-JC-141892 ext abs, January 2001.

Hornung, Richard, Scott Kohn, Andrew M. Wissink, Kevin Chu, Steven G. Smith, Noah Elliott, and Suzanne Caffee, "SAMRAI: A Software Framework for Structured Adaptive Mesh Refinement," DOE ASCI ASAP Frameworks/Integration Workshop, Salt Lake City, UT, February 10-11, 2000. Also available as Lawrence Livermore National Laboratory technical report UCRL-MI-133555 Rev. 1, February 2000.

Kohn, Scott, Richard Hornung, Suzanne Caffee, Kevin Chu, Noah Elliott, Steven G. Smith, Andrew M. Wissink, Kevin Durrenberger, Tom Epperly, Gary Kumfert, and Brent Smolinski, "Object-Oriented and Component Technology for Scientific Computing," Nat'l Cntr. For Atmospheric Research, Boulder, CO, August 10, 2000. Also available as Lawrence Livermore National Laboratory technical report UCRL-VG-139890, August 2000.

Ashby, S. F., W. J. Bosl, R. D. Falgout, S. G. Smith, A. F. B. Tompson, and T. J. Williams, "A Numerical Simulation of Groundwater Flow and Contaminant Transport on the CRAY T3D and C90 Supercomputers, " Int. J. High Perf. Comput. Apps., 13, (1999), pp. 80-93. Also available as Lawrence Livermore National Laboratory technical report UCRL-JC-118635, Rev. 1.

Tompson, Andrew F.B., Robert D. Falgout, Steven G. Smith, William J. Bosl, Steven F. Ashby, "Analysis of Subsurface Contaminant Migration and Remediation using High Performance Computing, Advances in Water Resources 22 (3/1998), pp. 203–221.

Kohn, S., A. Cleary, S. Smith, B. Smolinski, "Language Interoperability Mechanisms for High-Performance Scientific Applications," SIAM Workshop on Object-Oriented Methods for Inter-Operable Scientific and Engineering Computing, the IBM T.J. Watson Research Center, Yorktown Heights, NY, October 21–23, 1998. Also available as Lawrence Livermore National